GPS
Portable
Tracker

USER MANUAL
V6.18

Model No.: TK102

Updated on 10th.July.2010

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1 Summary

Working Based on existing GSM/GPRS network and GPS satellites, this product can locate and monitor any remote targets by SMS or GPR

2 Applications

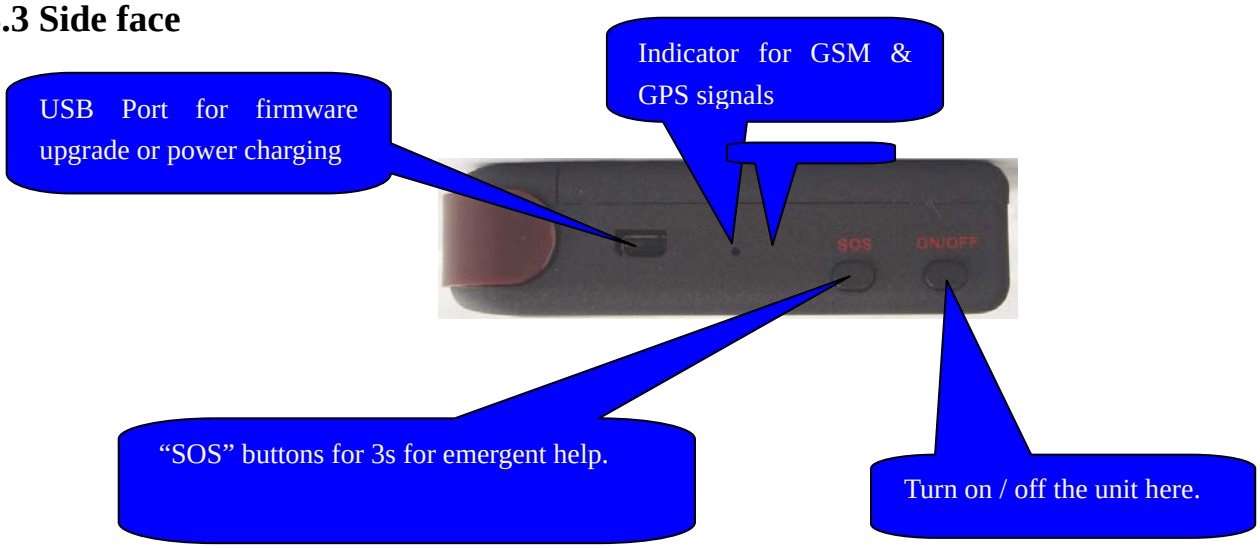
- Vehicle rental / Fleet management etc
- Protect child / the old / the disabled / pet etc
- Provide peace-of-mind for businessmen
- Manage personnel
- Track criminals secretly

3 Hardware Description

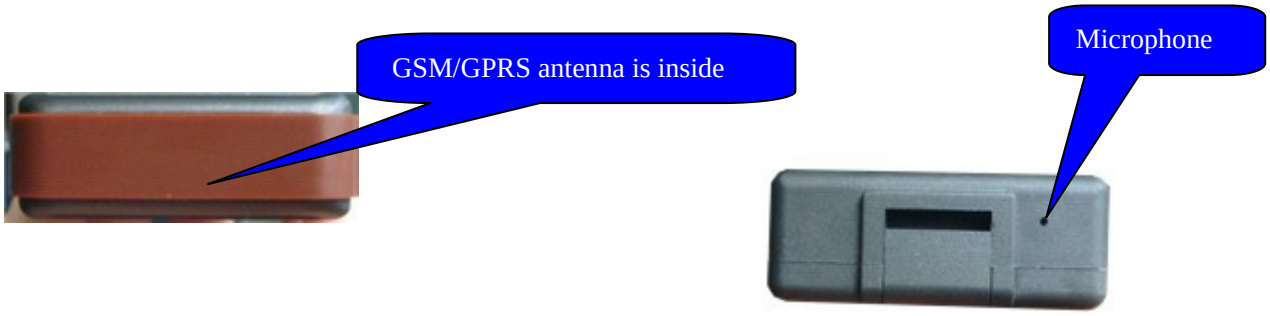
3.1 Front face

3.2 Rear face

3.3 Side face


Indicator for GSM & GPS signals
USB Port for firmware upgrade or power charging
SOS
ON/OFF
"SOS" buttons for 3s for emergent help.
Turn on / off the unit here.

3.4 Bottom face



3.5 Interior

4 For Your Safety

Read these simple guidelines. Not following them may be dangerous or illegal. Read the full user manual for more information.

Proper Connection - When connecting with other device, read carefully its manual so as to carry out correct installation. Do not connect it to other incompatible devices.
Qualified Accessories - Use original parts, qualified batteries and peripheral equipments to avoid damage to TK102
Safe Driving - Drivers should not operate this product while driving.
Qualified Service - Only qualified personnel can install or repair TK102.
Water Resistance – TK102 is not water resistant. Keep it dry. Install it inside the vehicle or use waterproof bag if necessary.
Confidential Phone Number - For safety reason, do not tell other people the SIM card number of your TK102 without taking precautions of security settings.

5 TK102 Parameters

Power Supply	+3.4V - +5V / 0.1A
Backup Battery	850mAh Li-ion battery
Dimension	64mm x 46mm x 17mm(1.8"*2.5"*0.65")
Weight	50g
Operating temperature	-20° to 55° C
Humidity	5% to 95% Non-condensing
Frequency	GSM 900/1800/1900Mhz or GSM 850/900/1800/1900Mhz
GPS Module	latest GPS SIRF-Star III chipset
GPS Sensitivity	-158Db
GPS Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 channel all-in-view tracking
Position Accuracy	10 meters, 2D RMS
Velocity Accuracy	0.1 m/s
Time Accuracy	1 us synchronized to GPS time
Default datum	WGS-84
Reacquisition	0.1 sec., average
Hot start	1 sec., average
Warm start	38 sec., average
Cold start	42 sec., average
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/second (1000 knots) max.
LED	2 LED lights to show GPS/GSM working status.
Flash Memory	8MB (Optional)
Interface	1 digital input for Ignition detection (Optional)

6 Getting Started

This section will describe how to set up your TK102

6.1 Hardware Features

TK102 includes:

- *TK102 Main Unit*
- *USB Cable*
- *User Manual*
- *Wall Charger*
- *2 Back up Li-ion battery*
- *CD including*
  - *User Manual*
  - *Other document or software if required*

6.2 Light and Button Functionality

Blue LED (GPS light) - indicating GPS status	
On	One or more inputs are active
Flashing (every 0.1 second)	The unit is being Initialized
Flashing (on for 0.1 second and off for 2.9 seconds)	TK102 has a GPS fix
Flashing (on for 1 second and off for 2 seconds)	TK102 has no GPS fix
Green LED (GSM light) - indicating GSM status	
On	One call is coming in/ one call is being made
Flashing (every 0.1 second)	The unit is being Initialized
Flashing (on for 0.1 second and off for 2.9 seconds)	TK102 is connected to the GSM network
Flashing (on for 1 second and off for 2 seconds)	TK102 is not connected to the GSM network
SOS Button	**Press it to send SMS alert**

6.3 Installation

Read this manual before using your TK102 and check if all parts are included in the packaging box.

Ensure that your TK102 has a working SIM installed.

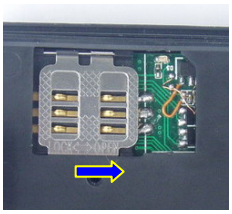
- Check that the SIM has not run out of credit (test the SIM in a phone to make sure it can send and receive SMS)

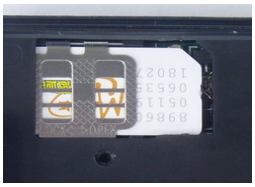
- Check that the SIM Lock code is turned off

- If you require the function of sending an SMS location report to the authorized phone number when it makes a call to the TK102, please make sure the SIM installed supports displaying caller ID.

- Insert the SIM card by sliding it into the card slot with the chip module facing to the connectors on PCB.

- Put back The battery and close the cover





- **Battery and Charger**

Do charge the battery to capacity in 8 -12 hours for first use. Please use the battery and charger provided by the manufacturer. This unit adopts built-in Li-ion battery, and full battery will support around 48 hours use on end. After first use, the battery can be charged fully in 3-5hours.

Cautions:

a: For it's Li-ion battery, which contains harmful chemicals and may burst, please don't bump, puncture it violently and keep it off fire.

b: Please charge the battery in time to keep it working normally.

Mini USB Port

Connect the tracker with computer by USB cable for configuration and reading stored waypoints data. You need to install the driver - ***PL-2303 Driver Installer*** - for using the USB cable.

Refer to <GPS Tracker Parameter Editor> for configuration and <GPSLog User Guide> for reading stored waypoints.

7 SMS Command

TK102 will only accept commands from a user with the correct password. Commands with wrong password are ignored. The default password is 000000.

7.1 Basic SMS Commands

7.1.1 Position Report

To know the location of your TK102, send an SMS or make a telephone call directly to TK102 and it will report its location by SMS.

Command: W<password>,<000>

Notes: The default password is 000000.

Example:

SMS sent: W000000,000

SMS received:

Latitude = 22 32 36.63N Longitude = 114 04 57.37E, Speed = 2.6854Km/h, 2008-12-24,01:50

To get TK102's position by another easier way:

(a) Call TK102 using your mobile phone.

(b) After listening to the ring for 10 - 20 seconds, hang up the phone.

(c) Then after 20 second, your mobile phone will receive a position SMS.

7.1.2 Set Interval for Automatic Timed Report

Description: Automatic timed reports will be sent to your mobile phone according to the time interval you set.

Command: W<password>,002,XXX

Notes: XXX is the interval in **minute**. If XXX=000 it will stop tracking

Example:

SMS sent: W000000,002,005

SMS received: Set Timer Ok/005

TK102 will then report its location by SMS every 5 minutes.

7.1.3 Stop Automatic Timed Report

Description: Automatic timed reports will stop once TK102 receives stop command.

Command: W<password>,002,000

Example:

SMS sent: W000000,002,000

SMS received: Set Timer Ok/000

TK102 will stop automatic timed report

For more detailed SMS commands please go to Chapter 10 - SMS Command List

7.2 GPRS Settings by SMS

Tracking via GPRS, you should set IP, Port and APN for TK102.

Ensure that your SIM card in TK102 supports GPRS connection prior to setting.

7.2.1 Set ID for TK102

Command: W<password>,010,ID

Note: Tracker ID must not over 14 digits.

Example: W000000,010,123456789

TK102 will then reply with an SMS (‘Set SIM Ok/123456789’) to confirm this setting.

7.2.2 Set APN

Command: W<password>,011,APN,APN Name,APN Password

Note: If no APN name and password required, input APN only.

Example: W000000,011,CMNET

TK102 will reply with an SMS (like ‘Set APN Ok/CMNET’) to confirm this setting.

7.2.3 Set IP Address and Port

Command: W<password>,012,IP,PORT

Example: W000000,012,202.116.11.12,8000

TK102 will then reply an SMS (‘Set IP Ok /202.116.11.12,8000’) to confirm this setting.

7.2.4 Set Time Interval for Sending GPRS Packet

Command: W<password>,014,time interval(in unit of 10 seconds)

Example: W000000,014,00003

TK102 will send GPRS packet every 30 seconds

7.2.5 Enable GPRS Tracking Function

Command: W<password>,013,X

X=0, to turn off GPRS tracking function (default);

X=1, to set TCP

X=2, to set UDP

Example: W000000,013,1

TK102 will reply with an SMS to confirm this setting.

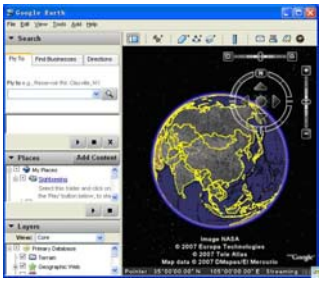
For more information regarding of bulk configuration by USB cable please refer to < GPS Tracker Parameter Editor>.

For more information regarding GPRS settings please refer to <GPRS Communication Protocol >.

8 Tracking on Map

Download Google Earth from http://earth.google.com/

Start the Google Earth (For more information about Google Earth please refer to http://earth.google.com/) as the following picture shows:



Input the latitude and longitude that you receive from the tracker by SMS and click the search button. Google Earth will display the location for you.

Example:

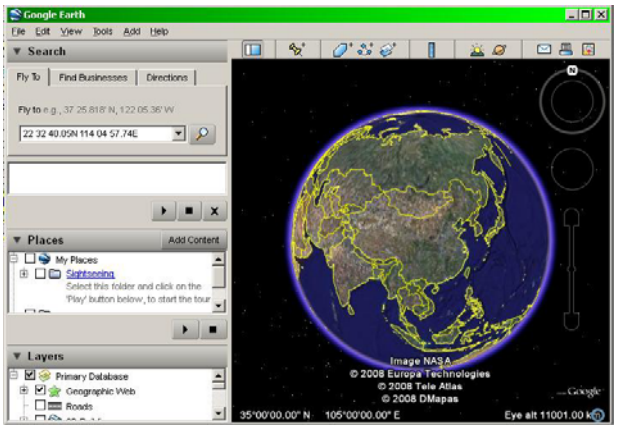
When you receive:

Latitude = 22 32 40.05N

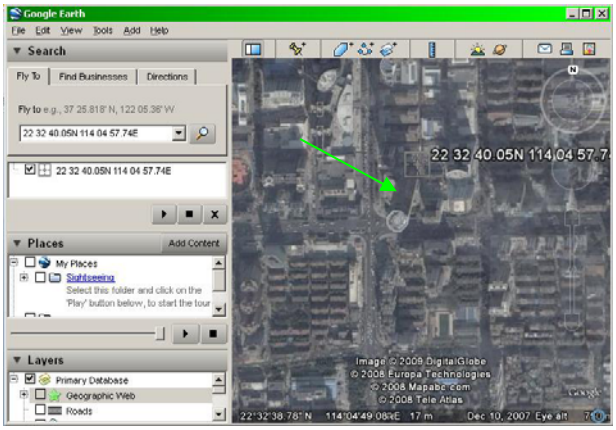
Longitude = 114 04 57.74E

Type as the following picture shows:

(Note: you should input the latitude and longitude as: 22 32 40.05N 114 04 57.74E)



Now you can find the location of your tracker:



Or you can start the Internet Explorer and connect to http://maps.google.com for displaying the location.

Or you can use local map software on PDA or car navigation device to input the coordinates.

9 Troubleshooting

Problem: Unit will not turn on	
Possible Cause:	**Resolution:**
Battery needs charging	Recharge battery
Problem: Unit will not respond to SMS	
Possible Cause:	**Resolution:**
GSM Network is slow	Wait for SMS. Some GSM networks slow down during peak time or when they have equipment problems.
Unit is sleeping	Cancel sleeping mode
Wrong password in your SMS or wrong SMS format	Write correct password or SMS format
The SIM in TK102 has run out of credit	Replace or top up the SIM card
No SIM card	Insert working SIM card. Check in phone that the SIM can send SMS message.
SIM card has expired	Check in phone that the SIM can send SMS message. Replace SIM card if needed.
SIM has PIN code set	Remove PIN code by inserting SIM in you phone and deleting the code.
SIM is warped or damaged	Inspect SIM, clean the contacts. If re-inserting does not help try another to see if it will work.
Roaming not enabled	If you are in a different country your SIM account must have roaming enabled.
Problem: SMS received starts with 'Last…'	
Possible Cause:	**Resolution:**
TK102 is in an inner place	Wait for the target to come out
Battery is low	Recharge the unit and the GPS will start working.

10 SMS Command List

(Remarks: ****** is user's password, and the default password is 000000)

Description	Command	Remarks
Get current location	W******,000	Get current location of TK102
Change user's password	W******,001,######	****** is old password ###### is new password
Set interval for automatic timed report	W******,002,XXX	XXX is the interval in minute. If XXX=000 it will stop tracking
Set preset phone number for SOS button	W******,003,F,P,T	F=0, to turn off this function; F=1, to send SMS; As SOS button is linked to IN1, P=1. T: Preset phone number. Max 16 digits
Set low power alert When TK102 voltage is lower than the preset value, it will send one low power alert to the SOS preset number.	W******,004,X	X (voltage preset value) =0 , to turn off this function =1, <3.3V send SMS alert =2 , <3.4V send SMS alert =3 , <3.5V send SMS alert (default) =4 , <3.6V send SMS alert =5 , <3.7V send SMS alert
Set over speed alert When TK102 speeds higher than the preset value, it will send an SMS to the SOS preset number.	W******,005,XX	XX (the preset value of speed) =00 , to turn off this function =[01, 20] (unit: 10Km/h) For example, W000000,005,08, it will sent alert when it is over 80Km/h
Set Geo-fence alert When the TK102 moves out of preset scope, it will send one Geo-fence SMS to the SOS preset number.	W******,006,XX	XX (preset distance to original place) =00, close =01, 30m =02, 50m =03, 100m =04, 200m =05, 300m =06, 500m =07, 1000m =08, 2000m

Extend Settings	W******,008,ABCDEFG###	**A=0**, turn off the function of sending an SMS location report to the authorized phone number when it makes a call to TK102. **A=1**, turn on the function of sending an SMS location report to the authorized phone number when it makes a call to TK102. **B=0**, location data of NMEA 0183 GPRMC will be interpreted into normal text for easy reading. For example: *Longitude = 114 degree - 04 cent -57.74 second* *Latitude = 22 degree -32 cent -40.05 second* **B=1**, location data complies with NMEA 0183 GPRMC protocol. For example: *$GPRMC,072414.000,V,3114.3763,N,12131.3255,E,0.00,0.00,050805,*00* **C=0**, turn off the function to automatically hang up an incoming call. **C=1**, turn on the function to automatically hang up an incoming call after 4 - 5 rings. **D=0**, Turn off the function of sending an SMS when TK102 is turned on. **D=1**, Turn on the function of sending an SMS to SOS number when TK102 is turned on. **E=0**, reserved **E=1**, TK102 shuts down automatically when the power voltage lower than 3V. **F=0**, Turn off the alert when TK102 enters GPS blind area. **F=1**, Turn on the alert when TK102 enters GPS blind area. SMS is to be sent to SOS number **G=0**, LED light works normally **G=1**, LED light stops flashing when TK102 working. ### is the ending character (default value is: ABCDEFG=1000100)

Presetting by SMS for GPRS tracking (*Ensure that your SIM card supports GPRS connection prior to setting)*		
Set ID for TK102	W******,010,ID	Tracker ID must not over 14 digits.
Set APN	W******,011,APN,APNName,APN Password	If no APN name and password required, just insert APN only; APN defaulted as 'CMNET'; APN + APN name + password not over 39 characters.
Set IP Address and Port	W******,012,IP, Port	IP: xxx.xxx.xxx.xxx Port: [1,65534]
Enable GPRS Tracking Function	W******,013,X	X=0, close GPRS (default); X=1, enable TCP X=2, enable UDP
Set Time Interval for Sending GPRS Packet	W******,014,XXXXX	XXXXX should be in five digitals and in unit of 10 seconds. XXXXX=00000, to close this function; XXXXX=00001~65535, time interval for sending GPRS packet and in unit of 10 seconds.
Set Distance Interval for Sending GPRS packet	W******,045,X	X should be from 0 to 65535, the Value is Meter X=0, to close this function
For more information regarding GPRS settings please refer to <GPRS Communication Protocol>		
Set power saving mode when TK102 is inactive (In power saving mode, GPS stops working. GSM enters standby mode and stop sending out message until it is activated by an SMS or an incoming call)	W******,026,XX This command Optional for the TK1022 which with Motion sensor	XX=00, to turn off this function XX=01~99, to set this function. It is in unit of minute. Example: If XX=10, TK102 will enter power saving mode after it is immobile for 10 minutes.
Set phone number for wiretapping	W******,030,T	T is the telephone number for wiretapping and max. 16 digits If T keep empty, change the wiretapping mode to tracking mode
Set interval for logging *(Note: this interval is not relevant to the interval of continuous tracking)*	W******,031,X This command is Optional for the TK1022 which with the 8MB memory	X=0, to turn off this function X=[1, 65535] to set interval in second. For example, W000000,031,60, TK102 will store location data every 60 seconds.
Set time zone difference	W******,032,T	T=0, to turn off this function T=[1, 65535] to set time difference in minute to GMT. Default value is GMT For those ahead of GMT, just input the time difference in minute directly. For example, W000000,032,120 '-'is required for those behind GMT. For

		example, W000000,032,-120.
Set character for SOS alert message	W******,033,1,Char	Char is the character in SOS message and max 32 characters
Get SMS in goolge link format	W******,100	The device will send the SMS report with google map link, which can open the map on the PDA or Smart phone.